

III. Remarks

Reconsideration and allowance of the subject application are respectfully requested.

Claims 1-47 are pending in the application. Claims 1, 43, 44, 45, and 46 are independent.

The undersigned and Applicants' Canadian representative, Mr. Omar Nassif, would like to thank Examiner Sorkin for the cordial and productive interview of November 30, 2004. The Examiner's helpful comments and suggestions were instrumental in preparing this response.

Claim 47 was rejected under 35 USC § 112, second paragraph, for the reasons noted at page 2 of the Office Action. Applicants respectfully traverse this rejection on the ground that the person of ordinary skill in the art would not be confused as to the meaning or scope of the claims. Nevertheless, Claim 47 has been amended for clarity with respect to the specification and Drawings, and not in response to any statutory requirement.

Claims 1-4, 8, 11, 14, 16, 18-20, 22-26, 30, 32-37, and 41-49 were rejected as being unpatentable over Kao, for the reasons detailed at pages 2-8 of the Office Action. As discussed at the interview, Applicants respectfully traverse all art rejections.

As discussed at the interview, independent Claim 1 recites a novel combination of structure and/or function

whereby a fluid radiation treatment system has a direction of fluid flow, and includes a surface configured to be disposed substantially parallel to a direction of fluid flow.

Two mixing elements are disposed with respect to the surface such that each mixing element is configured to generate at least one fluid vortex adjacent to the surface, downstream of the mixing element. At least one of the mixing elements has first normal located at a centroid thereof. As noted by the Examiner during the interview, ***the two mixing elements are oppositely angled with respect to a plane passing through the longitudinal axis of the surface.*** The surface has a second normal which intersects the first normal at the centroid; and the first normal, the second normal, and the direction of fluid flow are in a non-planar relationship.

As discussed at the interview, Kao fails to disclose or suggest such a combination of features including, *inter alia*, the two mixing elements are oppositely angled with respect to a plane passing through the longitudinal axis of the surface.

As also discussed at the interview, independent Claim 43 recites a novel combination of structure and/or function whereby a fluid radiation treatment system has two mixing elements configured to mix a flow of fluid having a direction of fluid flow. Each mixing element has a surface having a first normal which is: (i) acutely angled with

respect to a first plane having a second normal substantially perpendicular to the direction of fluid flow; and (ii) acutely angled with respect to a second plane parallel to the direction of fluid flow and orthogonal to the first plane. Again, as kindly pointed out by the Examiner during the interview, **the two mixing elements are symmetrically disposed with respect to the second plane.**

As discussed at the interview, Kao fails to disclose or suggest such a combination of features including, *inter alia*, the two mixing elements are symmetrically disposed with respect to the second plane.

Independent Claim 44 recites a novel combination of structure and/or function whereby a fluid radiation treatment system has at least one mixing element for mixing a flow of fluid having a direction of fluid flow. The at least one mixing element includes a surface having a normal which is acutely angled with respect to each of two planes which are orthogonal to one another, each plane intersecting on a line substantially parallel to the direction of fluid flow. The surface of the at least one mixing element has **a triangular shape consisting essentially of a leading edge, a trailing edge, and an apex at the intersection of the leading edge and the trailing edge.**

In contrast, Kao fails to disclose or suggest such a combination of features including, *inter alia*, the surface

of the at least one mixing element having a triangular shape consisting essentially of a leading edge, a trailing edge, and an apex at the intersection of the leading edge and the trailing edge.

Independent Claim 45 recites a novel combination of structure and/or function whereby **an ultraviolet radiation water treatment system** has at least one mixing element for mixing a flow of water having a direction of fluid flow. The at least one mixing element has a surface having a normal which is acutely angled with respect to a first plane and a second plane which is orthogonal to the first plane. The first plane and the second plane intersect on a line substantially parallel to the direction of fluid flow.

In contrast, Kao fails to disclose or suggest such a combination of features including, *inter alia*, an ultraviolet radiation water treatment system including the plane and normal configurations discussed above.

Independent Claim 46 recites a novel combination of structure and/or function whereby a fluid radiation treatment system has a direction of fluid flow, and first and second triangular-shaped mixing elements. The first triangular-shaped mixing element is disposed so as to form a first angle with respect to the direction of fluid flow, but the second triangular-shaped mixing element is disposed so as to form a second, different angle with respect to the direction of

fluid flow. In Kao, all of the mixing elements are angled the same with respect to the direction of fluid flow.

Accordingly, the salient claimed features of the present invention are nowhere disclosed or suggested by the cited art.

In view of the above amendments and remarks, it is believed that this application is now in condition for allowance, and a Notice thereof is respectfully requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 625-3507. All correspondence should continue to be directed to our address given below.

Respectfully submitted,


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